

Badania i Rozwój Młodych Naukowców w Polsce

Psychologia i socjologia



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Poznań 2016

Badania i Rozwój Młodych Naukowców w Polsce – Psychologia i socjologia

Redakcja naukowa

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Skład i łamanie tekstu

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Wydawca

Młodzi Naukowcy

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ISBN (całość) 978-83-65362-13-1

ISBN (wydanie online) 978-83-65362-72-8

ISBN (wydanie drukowane) 978-83-65677-01-3

Ilość znaków w książce: 620tys.

Ilość arkuszy wydawniczych: 15.5

Niniejsza pozycja jest monografią naukową.

Wszystkie teksty przeszły proces recenzji – spis recenzentów zamieszono na końcu książki.

Prace zostały wydrukowane zgodnie z przesłanym tekstem, na odpowiedzialność ich autorów.

1. Dimensions of maladaptive perfectionism as mediators of the relationship between social anxiety and examination stress

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Keywords: fear of negative evaluation, academic performance, self-criticism

Abstract

This study aimed to examine whether the dimensions of dysfunctional perfectionism mediate the relationship between social anxiety and examination stress. On the grounds of previous studies and social anxiety theory it was suggested that social anxiety is positively related to examination stress and maladaptive dimensions of perfectionism, in particular to concern over mistakes and doubts about actions. It was also hypothesised that two of the maladaptive dimensions of perfectionism (concern over mistakes and doubts about actions) are mediators of the relationship between social anxiety and examination stress, whereas both adaptive dimensions of perfectionism (personal standards and organization) do not mediate this relationship. The study was conducted on 148 students (124 women, 19 men, 5 participants did not report gender). Mean age was $M = 22.73$ ($SD = 6.67$). Valid, reliable and widely used psychometric tools were applied. The results were consistent with the hypotheses. Social anxiety and examination stress were positively associated with two maladaptive dimensions of perfectionism: concern over mistakes and doubts about action. However, they were not associated with personal standards nor organization. This indicates that socially anxious people may experience greater examination stress, because of their higher anxiety of being humiliated caused by the possibility of making mistakes accompanied by doubts about one's actions.

1. Introduction

School environment is a highly social construct in which students are somewhat forced to spend many hours in presence of others. As a result of this, they are inevitably judged and evaluated based on how they act. Moreover, educational system is progressively more focused on frequently examining students' abilities and knowledge. Furthermore, these evaluations can be detrimental to one's school career as well as future status. Both of those aspects of education may be influenced by fear of failure and negative evaluation, which are key components of test-anxiety and social anxiety. Researches show that these conditions are comorbid and that about 10% of the population report that they experience both of them at once (Knappe et al. 2011). Excessive stress during exams and tests may hinder the performance of a student (Zeidner 1998). Taking that into account it seems that large groups of students are potentially exposed to underachieving due to predisposition to social anxiety. Thus, it is essential to understand the mechanisms of a relationship between social anxiety and test-anxiety. One of the most plausible choices for what may influence this relation is perfectionism.

Being a multidimensional construct and a personality variable which plays a detrimental role in diversity of mental maladies, perfectionism is still thoroughly investigated and discussed. It has been implicated in disorders such as depression (Noble, Ashby and Gnilka 2014), social phobia (Juster et al. 1996), self-harm (O'Connor, Ramussen and Hawton 2010), anxiety, disordered eating, suicidality (Jacobs et al. 2009), insomnia (Vincent & Walker 2000), burnout or Obsessive Compulsive Disorder. Referring to DSM-5 (American Psychiatric Association 2013), being a component of OCD, rigid perfectionism is rigorous insistence on flawlessness and demanding that one's own and others' performance should be devoid of any

faults. It is connected with sacrificing one's time to ensure that everything is perfectly correct and thinking that there is a sole possibility to do things appropriately. Perfectionists find it hard to change their points of view and they seem to be preoccupied with organization, order and details. According to numerous studies, individuals who have to struggle with the negative side of perfectionism also might experience shame, constant sense of failure, procrastination and indecisiveness (Hamachek 1978).

The construct of perfectionism has been divided into two different types: adaptive, which is usually beneficial for people's lives and the second, maladaptive one, which is connected with emotional distress (Hamachek 1978). The first form of perfectionism has been called "normal perfectionism" as it is linked to the willingness to become better in one's actions and desire to achieve important goals, while the second form has been termed as "neurotic perfectionism". Slade and Owens (1998) advanced the argument by distinguishing between healthy and pathological form of perfectionism. These authors claimed that the healthy form is connected with positive reinforcement which can lead to attaining high personal standards without experiencing distress when the standards are not met. On the contrary, the pathological form of perfectionism is related to negative reinforcement and self-defeating behaviors which are connected with concerning about mistakes, and self-doubt or worrying about how an individual is evaluated by others (Slade & Owens 1998).

Social Anxiety Disorder (SAD), also known as social phobia, usually starts to develop in childhood or early adolescence (Chavira and Stein 2005) and generally becomes chronic. At pathological level, SAD has enormous influence on everyday life, including relationships between individuals as well as their professional career. Generally, anxiety is connected with four interrelated experiences, including somative, behavioral, affective and cognitive aspects. With reference to ICD-10 (World Health Organization 2015), social phobia is defined as a fear of being analysed by others which make people withdraw from social situations. Unlike persons who willingly isolate themselves from others as a result of psychiatric conditions like schizoid personality disorder, individuals with social anxiety disorder desire the company of other people. However, the discomfort connected with social situations makes them avoid companionship. Such individuals experience distress connected with expecting critical evaluation and they are afraid of acting in embarrassing and inappropriate way in the presence of others. Exposure to social events might provoke anxiety and even cause a panic attack. Most frequently, patients recognize these fears as exaggerated and irrational but they are not able to prevent such reactions. They struggle with visible symptoms such as sweating, nausea, trembling or blushing which are perceived by them as humiliating and at the same time, informing others that they are nervous. More severe social phobias are predominantly closely related to low self-esteem.

SAD is situated among the most frequent psychiatric disorders. It is a significant risk factor for developing major depression and it often coexists with major depression. What is more, the coexistence of SAD and major depression might also intensify the risk of suicide. SAD is also known to be comorbid with eating disorders and a large percentage of social anxiety disorder patients were reported to abuse alcohol and drugs. On the other hand, social fears are also common amongst the general population. Many people find it difficult to talk to strangers, give public speeches or participate in various meetings. These events might vary from important encounters to seemingly meaningless, trivial ones.

The clinical experience of Frost and his colleagues have led them to suggest that social phobia has relevance to perfectionism. It has been shown that persons with social phobia set unreachable goals (excessive standards of performance) in worrisome situations, so that they facilitate appearance of "mistakes" in such situations. Moreover, social phobic individuals are critical towards their own competence and they make unreasonable comparisons between themselves and other people, devaluing themselves most of times. They are afraid of performing below standards. According to Heimberg and his colleagues (1999), "danger may be averted only by social performance above a very high standard (i.e. perfect performance)". To achieve it, over-exaggerated attention to mistakes in social situations might occur.

Living in a world in which students are being constantly tested, they are prone to experience high level of stress during taking various kinds of exams. This caused a problem which is developing over the years and has been called test anxiety or examination stress. It is described as the feeling of hopelessness, expecting oneself to fail, fear and uneasiness. Cognitive test anxiety may cause decrease in the academic performance (Zeidner 1998). Moreover, individuals with high test anxiety worry about the consequences of failing. Adding to this, their critical thoughts toward themselves and critical internal dialogue lead to disruption in cognitive functions which otherwise, could be used to properly focus on given tasks. Students expecting failure may avoid preparation to exams, which might lead to a self-fulfilling prophecy.

The fear of performance and evaluation experienced by individuals with test anxiety is also present in social phobia, however persons with test anxiety frequently claim that it is possible for them to socialize and take part in many events without any problems. Taking that into account, social phobia does not have to be diagnosed in persons with test anxiety (Zeidner 1998).

A number of studies considering the relationship between perfectionism, social phobia and test anxiety have already been conducted. The study of Arana and Furlan (2016), suggested that individuals who experience maladaptive form of perfectionism also suffer from test anxiety more than those who are adaptive perfectionists. What is more, non-perfectionists do not cope better with tests than perfectionists regardless of form of their perfectionism because of problem-oriented strategies they choose in pre-exam coping. Another study considered the relationship between test anxiety and social phobia. With regard to study conducted by Knappe et al. (2011), test anxiety should not be generalized and perceived as equal to social phobia due to having qualitative and quantitative differences between each other. Performance-related social fears vary from interaction-related social fears and can be isolated. Other research suggests that social anxiety increases the level of self-critical perfectionism whereas the latter does not predict growth in social anxiety (Gautreau et al. 2015). These findings imply that the treatment of social phobia might also lower the tendency to self-critical perfectionism.

The aim of this research was to examine which dimensions of perfectionism mediate the relationship between social anxiety and examination stress. On the basis of previous research and theoretical frameworks considering social anxiety, it is presumed that this phenomenon is positively associated with examination stress (H1). It is also hypothesised that social anxiety is positively correlated with dysfunctional dimensions of perfectionism, especially with doubts about actions and concern over mistakes (H2). Furthermore, it is presumed that two of dysfunctional dimensions of perfectionism (doubts about actions and concern over mistakes) are mediator variables of the relationship between social anxiety and examination stress (H3). At the same time, both of the functional dimensions of perfectionism (personal standards and organization) do not mediate in this relationship (H4).

2. Methods

Participants. One hundred and forty eight students took part in this study: 124 women (83.8%), 19 men (12.8%), 5 persons (3.4%) did not report gender. Their mean age was $M = 22.72$ years ($SD = 6.67$). These individuals were studying at the universities from Pomerania Region in Poland: University of Gdansk, and Gdansk Higher School of Humanities. Students were from different faculties, courses of study, years and modes of study.

Measures. Social anxiety was measured with Liebowitz Social Anxiety Scale (LSAS) (Liebowitz 1987) which comprises 24 social situations involving 11 social interactions and 13 performance situations. Each sentence is rated on two scales: fear and avoidance. The response alternatives range from none (0) to severe (3) for fear and from never (0) to usually (3) for avoidance. It showed good validity and reliability in previous studies (Heimberg et al. 1999). For the present sample overall score, being the sum of two scales, was used and the Cronbach's alpha reliability coefficient was .96.

Perfectionism was measured by Multidimensional Perfectionism Scale (MPS) (Frost et al. 1990), a 35-item self-report measure with 5-point Likert response scale which showed good psychometric properties in previous research. It contains six subscales specified by authors: Concern Over Mistakes, Personal Standards, Parental Expectations, Parental Criticism, Doubts About Actions, and Organization. High score on each subscale reflects high score on certain dimension. General perfectionism is a sum of all scores from each subscale, excluding organization which has different profile than the others. For the present sample the Cronbach's alpha reliability coefficients ranged from .71 for Doubts About Actions to .91 for Concern Over Mistakes. Parental Expectations and Parental Criticism scales were not analysed within this study, as they are considered related rather to potential causes of dysfunctional perfectionism than to be its components.

Examination stress was measured by question "How much stressed are you usually during exams which you take as a part of your studies?" with 7-point response scale, from I am not at all stressed (1) to I am completely stressed (7). The test-retest method showed good reliability, and previous studies demonstrated good validity of the scale (Atroszko 2014, 2015).

Procedure. Data collection used convenience sampling. Students were invited to participate anonymously in the study during lectures or classes. More than 90% of all present students agreed to do so. Participation in the study was anonymous and no monetary or other material rewards were offered.

Statistical analyses. Means, standard deviations, percentages and correlation coefficients were calculated. Four mediation analyses were performed in which social anxiety was independent variable, dimensions of perfectionism were mediators and examination stress was dependent variable. Bootstrap method with bias corrected 95% confidence intervals and 10,000 bootstrap samples was used. All statistical analyses were conducted in IBM SPSS 23 and IBM SPSS AMOS 23.

3. Results

Tab.1 presents mean scores, standard deviations for the study variables as well as their interrelationships. Fig.1 and Fig.2 show mediation models with standardized regression coefficients.

Tab.1. Mean scores and standard deviations for the study variables as well as their interrelationships.

	<i>M (SD)</i>	1.	2.	3.	4.	5.
1. Social anxiety	47.93 (25.65)					
2. Doubts about actions	10.40 (3.21)	.43**				
3. Concern over mistakes	22.12 (7.72)	.36**	.59**			
4. Personal standards	21.97 (4.79)	.08	.28	.52**		
5. Organization	22.54 (4.90)	-.11	-.15	.01	.34**	
6. Examination stress	4.83 (1.68)	.47**	.35**	.33**	.12	.06

p* < .05; *p* < .01.

Firstly, the results of regression analyses showed significant relationship between social anxiety and examination stress (c path). Secondly, the results showed significant relationship between social anxiety and doubts about actions, and concern over mistakes (a path). Thirdly, the results showed significant relationship between doubts about actions and concern over mistakes and examination stress, when controlling for the effect of social anxiety (b path). The results showed insignificant relationship between social anxiety and organization, as well as between social anxiety and personal standards. Hence, these variables were not tested as potential mediators. Consequently, two mediation models including social anxiety as independent variable, examination stress as dependent variable and doubts about actions and concern over mistakes as potential mediators were tested. Mediation analysis showed that in the tested models, doubts about actions and concern over mistakes were significant mediators.

The model with doubts about actions as a mediator explained 25% (95% CI = 15% – 34%) of the variance in the examination stress, whereas model with concern over mistakes as a mediator explained 25% (95% CI = 15% – 35%) of the variance in the examination stress. Tab.2 shows the unstandardized regression coefficients, the Student *t* test and *p* values for each path in the mediation models. Tab.3 shows direct and indirect effects with 95% confidence intervals.

Tab.2. The unstandardized regression coefficients, the Student *t* test and *p* values for each path in the mediation model.

			<i>B</i>	<i>t</i>	<i>p</i>
Examination stress	←	Social anxiety	.03	6.42	< .001
Doubts about actions	←	Social anxiety	.05	5.75	< .001
Examination stress	←	Doubts about actions	.09	2.16	.033
Concern over mistakes	←	Social anxiety	.11	4.73	< .001
Examination stress	←	Concern over mistakes	.04	2.26	.025
Personal standards	←	Social anxiety	.02	1.08	.284
Examination stress	←	Personal standards	.03	1.03	.307
Organization	←	Social anxiety	-.02	- 1.25	.212
Examination stress	←	Organization	.04	1.49	.139

Tab.3. Direct effects and indirect effects, and 95-percent confidence intervals in particular mediation models.

Model	Independent variable	Mediator	Dependent variable	Direct effect	95% CI	Indirect effect	95% CI
1	Social anxiety	-	Examination stress	.40	.27 to .51	-	-
	Social anxiety	Doubts about actions	Examination stress	-	-	.08	.02 to .15
2	Social anxiety	-	Examination stress	.41	.29 to .52	-	-
	Social anxiety	Concern over mistakes	Examination stress	-	-	.07	.02 to .13

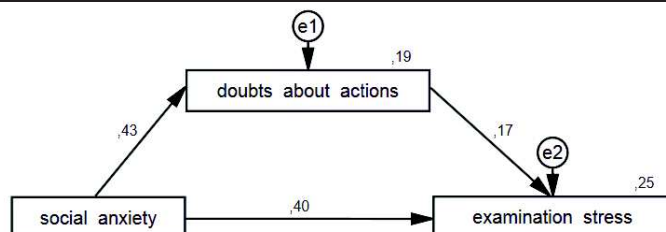


Fig.1. Mediation model in which social anxiety was independent variable, doubts about action was mediator and examination stress was dependent variable.

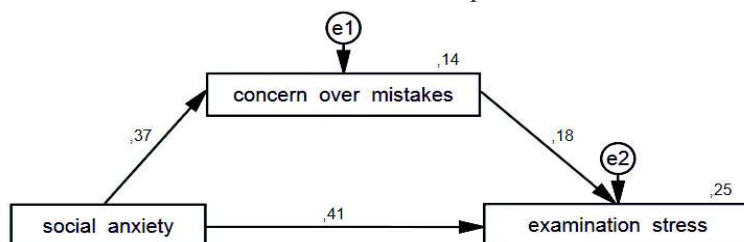


Fig.2. Mediation model in which social anxiety was independent variable, concern over mistakes was mediator and examination stress was dependent variable.

4. Discussion and conclusions

In accordance with expectations and predictions based on the previous research all hypotheses were confirmed. Social anxiety was positively associated with examination stress (H1 substantiated). It is established that Social Anxiety Disorder begins to develop in early

stages of life. Most frequently SAD is developed by children and early adolescents (Chavira & Stein 2005). On this stage of development young people have to confront a lot of tests at school. Exam situations often lead to comparisons with other individuals, result of which may be perceived as stressful. Children and teenagers might develop a fear of performance and evaluation (Zeidner 1998). As a result, they may start to project this behavior on other spheres of their lives.

Moreover, social anxiety is positively related to dysfunctional dimensions of perfectionism, especially to doubts about actions and concern over mistakes (h2 substantiated). Individuals with social anxiety and those who manage maladaptive perfectionism have similar approach to setting and reaching goals. Both groups have a tendency to be critical of their own behavior, they are afraid they could make a mistake which would expose them to external criticism. Because of this deep fear they may stop taking any actions to avoid comparison with others and to fulfill others' expectations. What is more, there is connection between doubts about actions and parental criticism. Parental criticism has also significant association with concern about mistakes (Frost et al. 1990). Parents have a massive influence on their children, and their positive and warm attitude might help social phobics or perfectionists cope with their anxiety or perfectionism. Furthermore, concern about mistakes is connected with personal standards. Individuals with social anxiety and persons with "neurotic perfectionism" have overstated their own expectations. They aspire to perform perfectly in all areas to avoid negative evaluation from others.

Doubts about actions and concern over mistakes were partial mediators of the relationship between social anxiety and examination stress (H3 substantiated). The results show that doubts about action and concern over mistakes, which are substantial components of maladaptive perfectionism, have a significant impact on the level of examination stress.

On the other hand, personal standards and organization were not mediators of the relationship between social anxiety and examination stress (H4 substantiated). The functional dimensions of perfectionism were not related to social anxiety. These results suggest that individuals manifesting social anxiety may vary as far as their personal standards and organization are concerned. It was previously demonstrated that individuals with adaptive perfectionism also rarely show test anxiety (Arana & Furlan 2016). Since high personal standards may be related to higher sense of agency, and organization within learning context may promote better preparation to tests and higher self-confidence, the potential moderating effect of these variables on the relationship between social anxiety and exam stress should be investigated in the future studies.

In conclusion, this study is important, especially in the academic context, because it shows that dysfunctional dimensions of perfectionism are mediators between social anxiety and experienced examination stress, while functional dimensions are not. This implies that individuals with social phobia may experience test anxiety not because of higher personal standards and organization but due to their increased concern about mistakes and doubts about actions. Addressing problems with excessive worry about possibility of committing mistakes may not directly reduce the social anxiety, however, it may help those who manifest it to reduce their exam stress and consequently improve their academic performance despite their social phobia.

As far as the Authors are aware, the present study is the first to investigate the mediation effect of perfectionism in the relationship between social anxiety and examination stress among university students. Valid and reliable measures were used in the study. Regarding the limitations, the sample was fairly small, predominantly female and not representative which limits the possibility of generalizing conclusions to the whole population of students in Poland. Furthermore, all data in the present study were based on self-report which increases the risk of common method bias. Future studies should further investigate the role of social anxiety in test and exam stress, and the scope of potential detrimental effects of excessive doubts and concerns over mistakes on school and academic performance. Potential intervention programs for children at risk of excessive test anxiety focusing on reducing worry

about making mistakes should be developed. More generally, culture based on learning from own mistakes and embracing basic human imperfections should be more promoted within the educational system, instead of training students to find unique solutions to narrowly defined problems.

5. Literature

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